

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. – 15. (Canceled)

16. (Previously Amended) A method of infusing a fluid into a body of a user, the method comprising:

- obtaining a current blood glucose concentration of the user;
- generating a controller input based on the current blood glucose concentration;
- generating commands by a proportional plus, integral plus, derivative (PID) controller from the controller input using at least one preset controller gain, wherein a proportional component and a derivative component of the PID controller are combined to represent a first phase insulin response, as measured from a normal glucose tolerant individual, and an integral component of the PID controller represents a second phase insulin response, as represented by the steady increase in insulin release under hyperglycemic clamp; and
- infusing the fluid based on the commands from the PID controller;
- wherein the PID controller accurately estimates a hypoglycemic glucose excursion.

17. – 31. (Canceled)

32. (Previously Amended) A system for infusing a fluid into a body of a user, the system comprising:

means for obtaining a current blood glucose concentration of the user;

means for generating a controller input based on the current blood glucose concentration;

means for generating commands by a proportional plus, integral plus, derivative (PID) controller from the controller input using at least one preset controller gain, wherein a proportional component and a derivative component of the PID controller are combined to represent a first phase insulin response, as measured from a normal glucose tolerant individual, and an integral component of the PID controller represents a second phase insulin response, as represented by the steady increase in insulin release under hyperglycemic clamp; and
means for infusing the fluid based on the commands from the PID controller;
wherein the PID controller accurately estimates a hypoglycemic glucose excursion.

33. – 34. (Canceled)

35. (Previously Presented) The method of infusing a fluid into a body of a user in accordance with claim 16, wherein the PID controller is a bilinear PID controller.

36. (Previously Presented) The system for infusing a fluid into a body of a user in accordance with claim 32, wherein the PID controller is a bilinear PID controller.